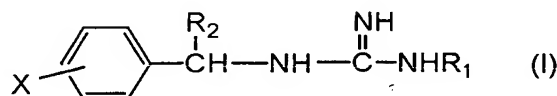


### REMARKS

Applicants' claimed invention relates to defoliation of plants by applying effective amounts of **(i)** a substituted nitroguanidine or cyanoguanidine compound of formula (I)



in which  $\text{R}_1$  is  $\text{NO}_2$  or  $\text{CN}$ ;  $\text{R}_2$  is  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ , or  $\text{CF}_3$ ;  $\text{X}$  is hydrogen, o-F, m-F, p-F, m- $\text{OCH}_3$ , m-OH, or p-Cl; **(ii)** thidiazuron, diuron, ethephon, or a protoporphyrinogen oxidase inhibitor herbicide; and **(iii)** optional adjuvants, where the weight ratio of active ingredient (i) to active ingredient (ii) is from about 1:0.05 to about 1:200.

Applicants have incorporated the limitations of Claim 11 into Claim 10, which now corresponds to Claim 11 written in independent form. Applicants have added Claim 23, which is limited to the (+)-isomer of the compound specified in Claim 9. In view of the subject matter of the added claim, Applicants suggest that Claim 23 be inserted between Claims 9 and 10 in the printed patent.

### Rejection under 35 U.S.C. 112

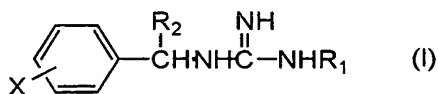
Claim 13 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite. More particularly, the Office Action states that the word "concentration" in line 3 should instead be "concentrate" and questions the use of the terms "crop oil [concentrate]" and "vegetable oil concentrate" to describe certain adjuvants. Applicants respectfully traverse.

Applicants acknowledge the kind suggestion in the Office Action at page 3 to amend Claim 13. Applicants have accordingly replaced the word "concentration" with "concentrate" to correct an obvious typographical error. With respect to the term "crop oil concentrate," however, Applicants have not amended Claim 13 as suggested. The term "crop oil concentrate" does not refer to the ultimate product formulation but instead refers to known materials of the type described in Applicants' specification at page 10, lines 10-12. Applicants respectfully submit that Claim 13 fully satisfies the requirements of Section 112 in this respect.

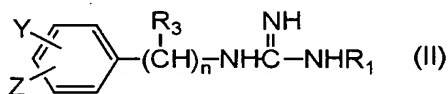
**Rejection under 35 U.S.C. 102**

Claims 10-12, 14, 19, and 20 stand rejected under 35 U.S.C. 102(a), (b) and (e) as being anticipated by U.S. Patent 4,639,268 ("Arotin et al"). Applicants respectfully traverse.

Arotin et al discloses plant defoliants of formula (I)



(in which R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is n-C<sub>3</sub>H<sub>7</sub>, CH<sub>2</sub>OCH<sub>3</sub>, or CH<sub>2</sub>CH=CH<sub>2</sub>; and X is hydrogen, ortho-, meta-, or para-fluoro, meta-methoxy, meta-hydroxy, or para-chloro), and of the related formula (II)



(in which R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>3</sub> is allyl, CF<sub>3</sub>, or C<sub>1</sub>-C<sub>3</sub> alkyl that is optionally substituted with OH or OCH<sub>3</sub>; and X is hydrogen, ortho-, meta-, or para-fluoro, meta-methoxy, meta-hydroxy, or para-chloro; Y is hydrogen, halogen or OR<sub>4</sub> where R<sub>4</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub> alkyl; Z is hydrogen, halogen, CH<sub>3</sub>, or CF<sub>3</sub>; n is 0 or 1), as well as their salts and optical isomers. E.g., column 2, lines 24-58.

Applicants note at the outset that Claims 11 and 20 have been canceled and are no longer at issue for this rejection. Applicants note also that their claims as amended do not include compounds of their formula (I) in which R<sub>2</sub> could be n-C<sub>3</sub>H<sub>7</sub>, CH<sub>2</sub>OCH<sub>3</sub>, or CH<sub>2</sub>CH=CH<sub>2</sub> as required by Arotin et al for its formula (I). Thus, only formula (II) of Arotin et al has any possible relevance to anticipation.

The remaining claims at issue for this rejection – Claims 10, 12, 14, and 19 – are now limited to embodiment in which the guanidine compound must be the (+)-isomer of 1-(α-ethylbenzyl)-3-nitroguanidine. Arotin et al, although it briefly mentions optical isomers, does not teach or suggest how to make such compounds. It is well established that a reference being cited for purposes of determining anticipation must be enabling with respect to the claims at issue. Although a reference need not provide details about principles that are well known in the art, the reference must contain within its four corners a description sufficiently enabling to guide one skilled in the art to the invention at issue without the need for undue experimentation. E.g., *Minnesota Mining and Manufacturing v. Chemque*, Mo6853

64 U.S.P.Q.2d 1270, 1274, 1278 (Fed. Cir. 2002), and *In re Borst*, 345 F.2d 851, 855, 145 U.S.P.Q. 554, 557 (C.C.P.A. 1965); see also *Spalding & Evenflo Companies v. Acushnet*, 13 U.S.P.Q.2d 1081, 1094 (D.C. Mass. 1989), citing *Lewmar Marine v. Barient*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1767-68 (Fed. Cir. 1987), *cert. denied*, 108 S. Ct. 702 (1988), and *Akzo N.V. v. U.S. Intern. Trade Commission*, 808 F.2d 1471, 1479, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. Ct. 909 (1987). Applicants respectfully submit that Arotin et al does not satisfy this requirement of enablement. Thus, Arotin et al cannot anticipate the method of Applicants' Claim 10, much less the other, even more narrowly defined claims at issue.

Furthermore, Arotin et al teaches that the disclosed defoliants can be used alone or in combination with other types of defoliants but does not teach or suggest combinations of the (+)-isomer of 1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine with the specific second active components specified in Applicants Claim 15 (as well as its dependent Claim 16) or that such combinations would exhibit advantageous properties.

Applicants therefore respectfully submit that Arotin et al does not anticipate their claimed invention.

### **Rejection under 35 U.S.C. 103**

Claims 1-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Arotin et al. Applicants note at the outset that Claims 3, 11, 20, and 22 have been canceled and are no longer at issue for this rejection. Applicants respectfully traverse with respect to the remaining claims.

For essentially the reasons discussed above with respect to the anticipation rejection, Applicants submit that Claims 10, 12, 14, and 19, as well as Claims 5, 7, 13, 17, 21, and 23, all of which are directed to embodiments in which the specified the guanidine compound is the (+)-isomer of 1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine, are not rendered obvious by Arotin et al. In further support of their position, Applicants point to the experimental data in Tables 1 to 3 (pages 13-15), which clearly show that the (+)-isomer is even more effective than a mixture of (+)- and (-)-isomers (which it may be noted is also particularly effective). In view of the absence from Arotin et al of any specific disclosure of (+)-1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine or of

the expectation of enhanced activity associated with its use, Applicants submit that Claims 5, 7, 10, 12-14, 19, 21, and 23 are not rendered obvious by Arotin et al.

Applicants respectfully submit that the remaining claims at issue – Claims 1, 2, 4, 6, 8, 9, and 15-18 – are also patentable. These claims are directed to methods that are in general not limited to a particular guanidine compound or a particular optical isomer. However, each of these claims is directed to the use of only a very narrow group of second active ingredients. Applicants submit that Arotin et al does not suggest the use of such a narrow group of compounds. Claim 9 in particular is directed to mixtures of 1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine and thidiazuron, which Applicants' examples clearly show to have exceptional defoliant activity. In addition, Claims 15-18 are limited to the defoliation of cotton. In view of the narrow scope of these claims, Applicants submit that Claims 1, 2, 4, 6, 8, 9, and 15-18 are not rendered obvious by Arotin et al.

In sum, Applicants submit that their claimed invention is not rendered obvious by Arotin et al.

#### **Typographical Errors**

Applicants have amended the specification at pages 3 and 6-7 to correct obvious typographical errors having no effect on the scope of their disclosure. The correction of the term "(+)-isomers" to include the hyphen has also been made in claims as necessary.

In view of the preceding amendments and remarks, allowance of the claims is respectfully requested.

Respectfully submitted,

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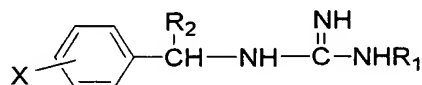
**ANNOTATED VERSION OF AMENDMENTS**

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**IN THE SPECIFICATION:**

The paragraph beginning at page 3, line 4, has been amended as follows:

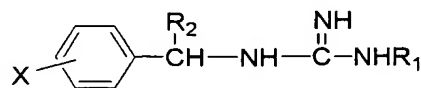
-- Arotin et al., U.S. Patents Nos. 4,639,268 and 5,175,365, disclose substituted nitroguanidine or cyanoguanidine compounds of the structure:



wherein R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is n-C<sub>3</sub>H<sub>7</sub>, CH<sub>2</sub>OCH<sub>3</sub> or CH<sub>2</sub>CH=CH<sub>2</sub>; X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl; the salts, tautomers and optical isomers thereof and the (+) or (-)-isomers of compounds having the above structure, wherein R<sub>1</sub> and X are as described and R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or CF<sub>3</sub>, for use in preemergence control of undesirable broadleaf weeds and grass plants and in defoliating and/or desiccating plants. Arotin et al. teach that the substituted nitroguanidine or cyanoguanidine compounds may be used in combination with defoliants including [N-(substituted phenyl)-N-1,2,3-triadiazole-5-yl] N-(substituted phenyl)-N-1,2,3-thiadiazole-5-yl ureas; tributyl phosphorotrithioate; sodium chlorate; 2-(2-imidazolin-2-yl)quinolines; 2-(2-imidazolin-2-yl)-pyridines; [0,0,0',0'-tetraethyl] O,O,O',O'-tetraethyl dithiopyrophosphate; and 2,1,3-benzothiadiazole-dicarbonitriles. --

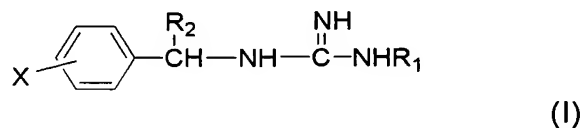
The paragraph beginning at page 6, line 22, continuing through page 7, line 9, has been amended as follows:

-- Suitable guanidine compounds include substituted nitroguanidine and cyanoguanidine compounds of the formula:



wherein R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, CF<sub>3</sub>, n-C<sub>3</sub>H<sub>7</sub>, CH<sub>2</sub>OCH<sub>3</sub> or CH<sub>2</sub>CH=CH<sub>2</sub>; X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl; and the salts, tautomers and optical isomers thereof. In one embodiment the guanidine compound is selected

from the group consisting of consisting of ~~[(+)-isomers]~~ (+)-isomers, (-)-isomers and mixtures thereof of compounds having the formula (I):



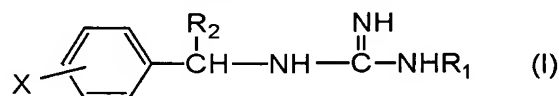
wherein R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or CF<sub>3</sub>; and X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl. Preferably the guanidine compound is 1-(α-ethylbenzyl)-3-nitroguanidine, which exists in [a] (+) and (-) isomeric forms. More preferably the guanidine compound is (+)-1-(α-ethylbenzyl)-3-nitroguanidine. --

### **IN THE CLAIMS:**

As explicitly set forth in 37 C.F.R. 1.121(c)(1)(ii), an annotated version does not need to be supplied for an added claim or a canceled claim as long as it is stated that a particular claim has been added or canceled. Here, Claims 3, 11, and 22 have been canceled and Claims 23 has been added.

Claims 1, 10, 13, 15, and 19 have been amended as follows:

- (1) (amended) A method of defoliating plants comprising applying to plants an effective amount of a first active ingredient selected from the group consisting of (+)-isomers, (-)-isomers and mixtures thereof of substituted nitroguanidine and cyanoguanidine compounds of the formula (I):

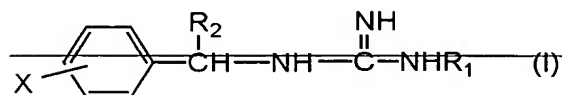


wherein R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, or CF<sub>3</sub> [~~n-C<sub>3</sub>H<sub>7</sub>, CH<sub>2</sub>OCH<sub>3</sub> or CH<sub>2</sub>CH=CH<sub>2</sub>;~~ X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl; and the salts, tautomers and optical isomers thereof;

- (2) an effective amount of a second active ingredient selected from the group consisting of thidiazuron, diuron, ethephon, protoporphyrinogen oxidase [(PPO)] inhibitor herbicides; and [;]
- (3) optionally, an adjuvant;

wherein the weight ratio of the first active ingredient to the second active ingredient is from about 1:0.05 to about 1:200.

10. (amended) A method of inhibiting leaf regrowth in cotton comprising applying to cotton an effective amount of a guanidine compound [~~having the formula (I):~~]

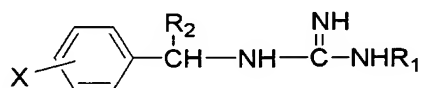


wherein ~~R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or CF<sub>3</sub>; and X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl, and] that is (+)-1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine or the salts [;] or tautomers [and optical isomers] thereof.~~

13. (amended) A method according to Claim 10, wherein the guanidine compound is in the form of a composition comprising the a guanidine compound and an adjuvant selected from crop oil [~~concentration~~] concentrate, vegetable oil concentrate, ammonium sulfate and combinations thereof

15. (amended) A method of inhibiting leaf regrowth in cotton comprising applying to cotton

(1) an effective amount of a first active ingredient selected from the group consisting of [~~(+)-isomers~~] (+)-isomers and (-)-isomers of guanidine compounds having the formula:



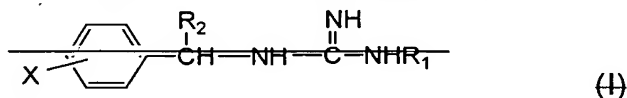
wherein R<sub>1</sub> is NO<sub>2</sub> or CN; R<sub>2</sub> is CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or CF<sub>3</sub>; and X is hydrogen, o-F, m-F, p-F, m-OCH<sub>3</sub>, m-OH or p-Cl;

(2) an effective amount of a second active ingredient selected from the group consisting of thidiazuron, diuron, ethephon, protoporphyrinogen oxidase [(PPO)] inhibitor herbicides, ammonium sulfate and combinations thereof; and [;]

(3) optionally, an adjuvant.

19. (amended) A composition comprising

(1) a first ingredient [~~selected from the group consisting of substituted nitroguanidine and cyanoguanidine compounds of the formula (1):~~



wherein  $\text{R}_1$  is  $\text{NO}_2$  or  $\text{CN}$ ;  $\text{R}_2$  is  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ ,  $\text{CF}_3$ ,  $n\text{-C}_3\text{H}_7$ ,  $\text{CH}_2\text{OCH}_3$  or  $\text{CH}_2\text{CH}=\text{CH}_2$ ;  $\text{X}$  is hydrogen, *o*-F, *m*-F, *p*-F, *m*-OCH<sub>3</sub>, *m*-OH or *p*-Cl]

that is (+)-1-( $\alpha$ -ethylbenzyl)-3-nitroguanidine; and the salts [;] and tautomers [and optical isomers] thereof; and

(2) [and] a second ingredient selected from the group consisting of herbicides, adjuvants, plant growth regulators, desiccant, boll opening compounds, pesticides, fertilizers and defoliants other than [guanidine compounds having the formula (1)] the first ingredient;

wherein the composition is in the form of a liquid comprising the first ingredient and the second ingredients at amounts sufficient to provide from about 0.03 to about 0.5 lb/acre of the first ingredient and from about 0.005 to about 10 lb/acre of the second ingredient.